LOUCEK, D.

"Geomorphology of the High Mountain Region of the Kralova Hola in the Low
Tatra" P. 1
(ROZPRAVY, RADA MATEMATICKO-PRIRODOVEDECKA   Vol. 64, No.8, 1954 -Praha, Czech.)

SO: Monthly List of East European Accessions, (EEAL), LC, Vol. 4, No. 4,
    April 1955, Uncl.

LOUCEK, D.; KUNDRY, J.

Ground moraines and mounds of earthy rock debris and boulders in the Riesengebirge Mountains. P. 80. OCHRANA PRIRODY. (ministerstvo kultury. Statni pece of ochranu prirody) Praha. Vol. 11, no. 3, Apr. 1956.

SOURCE: East European Accessions List, Vol. 5, no. 8, September 1 956

LOUCEK, D.; LOCHMAN, Z.

Preliminary report on mapping the glaciofluvial formation in the Neisse River valley
of northern Bohemia. p. 212.
(Sbornik, Vol. 61, no. 3, 1956, Praha, Czechoslovakia)

SO: Monthly List of East European Accessions (EEAL) LC, Vol. 6, no. 6, June 1957, Uncl.

LOUCEK, D.

Stanislaw Lencewicz's Geografia fizyczna Polski (Physical Geography of Poland) with
supplement by Jerzy Kondracki. A book review. p. 230.
(Sbornik, Vol. 61, no. 3, 1956, Praha, Czechoslovakia)

SO: Monthly List of East European Accessions (EEAL) LC, Vol. 6, no. 6, June 1957, Uncl.

LOUCEK, D.

The Alpine Karst in Dumbir (Low Tatra)   p.1-44
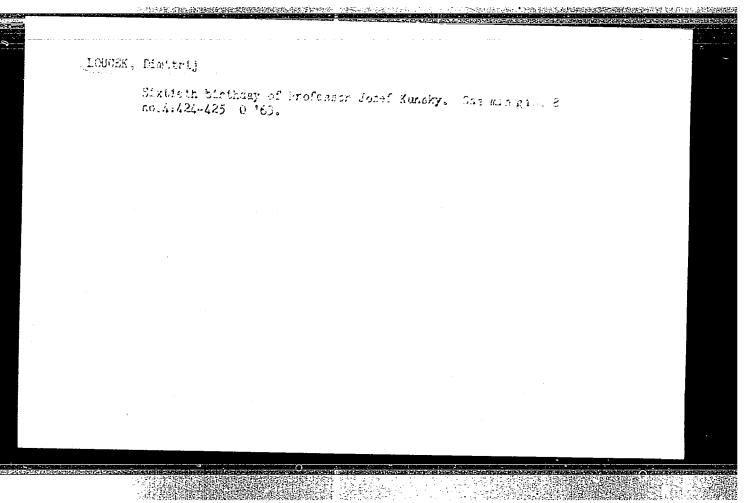ROZPRAVY. RADA MATEMATICKO-PRIRODOVEDECHA, Prague, Vol. 66, no. 3, 1956.

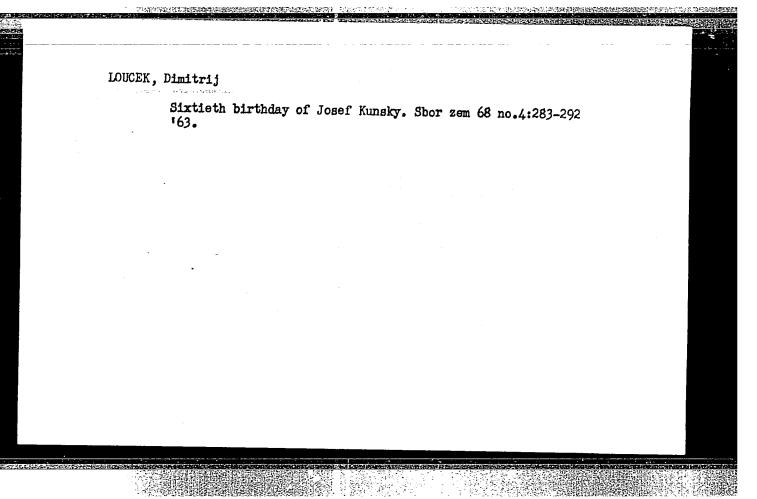SO: Monthly List of East European Accessions. (EEAL), LC, Vol. 5, No. 6 June 1956, Uncl.

LOUCEK, D.; MALEK, R.

"The 7th Congress of the Czechoslovak Geographical Society in Brno in 1957."

p. 289 (Sbornik) Vol. 62, no. 4, 1957
Prague, Czechoslovakia

SO: Monthly Index of East European Accessions (EEAI) LC. Vol. 7, no. 4,
     April 1958

LOUCEK, Dimitrij

Sixtieth birthday of Professor Josef Kunsky. Cas mis gi. 8
no.4:424-425 O '63.

LOUCEK, Dimitrij

      Sixtieth birthday of Josef Kunsky. Sbor zem 68 no.4:283-292
      '63.

LOUCEK, Dimitrij

      Geography and encyclopedias. Sbor zem 69 no.4:300-305 '64.

      1. Encyclopedia Institute of the Czechoslovak Academy of
Sciences, Prague 1, Vaclavske namesti 41.

LOVCHIY, N.F. [Louchy, M.F.]

Effect of the groundwater level of water-logged and swamp soils on the growth of alder, ash, birch, pine and spruce. Vestsi AN BSSR. Ser.biial.nav. no.2:20-26 '62.   (MIRA 15:8)

(SOIL MOISTURE)   (FOREST ECOLOGY)

LOUCKA, Ladislav

Automation in production of fittings. Stroj vyr 10 no.6:
278-280 '62.

1. Jihomoravska armaturka, n.p., Hodonin.

Z/009/60/000/03/006/028
E142/E235

AUTHORS: Mervart, Z., Křen, J., and Loučka, P

TITLE: Economic Analysis of the Effect of the Properties of
           Solvents on the Separation of 1,3-Butadiene\ by
           Extraction Rectification

PERIODICAL: Chemický průmysl, 1960, Nr 3, pp 132-135

ABSTRACT: The separation of the C_4 hydrocarbon fraction, which is
          important in the manufacture of butadiene rubber, can be
          carried out by extraction rectification, using polar
          liquids which are selective for hydrocarbons with lower
          degree of saturation. Furfural, containing 4% of water
          (aqueous furfural), has been used by various authors for
          separating 1,3-butadiene (Refs 1 to 4). The authors
          investigated the possibility of using as solvent a
          mixture of acetone, containing 18% of water (aqueous
          acetone) and bis (2-chloroethyl) ether ("chlorex") (Ref 5).
          Flow sheets for both methods are given (Figs 1 and 2).
          The effect of the solvents on the relative volatility
          of the hydrocarbons, on the solubility of the hydro-
          carbons in the solvents, and on their properties under
          industrial conditions were compared (Table 1). The
Card 1/2 decisive economical factors were found to be the

Z/009/60/000/03/006/028
E142/E235

Economic Analysis of the Effect of the Properties of Solvents on the Separation of 1,3-Butadiene by Extraction Rectification

corrosive and thermal properties of the solvents and the solubility of liquid hydrocarbons. Cost estimates for machinery when using aqueous acetone, aqueous furfural and chlorex are compared in Tables 2 and 3. Data on power consumption per ton of butadiene are compared in Table 4. The authors conclude that aqueous acetone is most satisfactory from an economical point of view, in spite of the fact that its use involves a more complicated technological process. There are 2 figures, 7 tables and 9 references, 2 of which are Czech, 6 English and 1 Soviet.

ASSOCIATION: Kaučuk, n.p., Výzkumný ústav syntetického kaučuku, Gottwaldov (Kaučuk n.p., Research Institute for Synthetic Rubber, Gottwaldov)

SUBMITTED: October 28, 1959

Card 2/2

VENCLIK, Hynek; LOUCKA, Ladimir

Functionally successful anastomosis of the facial and hypoglossal nerves. Csl otolaryn 3 no.1:26-31 Mr '54.   (KEAL 3:8)

1. Otolaryngologicke oddeleni KUNZ v Ceskych Budejovicich, prim. Dr H.Venclik. 2. Neurologicke oddeleni KUNZ v Ces. Budejovicich, prim. Dr Vl. Loucka.
(PARALYSIS,
  *facial, surg., anastomosis of facial & hypoglossal
  nerves)
(NERVES, FACIAL, paralysis,
  *surg., anastomosis of facial & hypoglossal nerves)
(NERVES, HYPOGLOSSAL, surgery,
  *anastomosis with facial nerve in facial paralysis)

PITTER, Jaroslav; LOUCKA, Vladimir

The outcome of retrobulbar neuritis from the viewpoint of disseminated cerebrospinal sclerosis from 10 years of experience. Cesk. ofth. 17 no.4/5:269-274 Jl '61.

1. Ocni a neurologicke oddeleni krajske nemocnice v Ceskych Budejovicich, prim. MUDr. Jaroslav Pitter - prim. MUDr. Vladimir Loucka.

(OPTIC NERVE dis)
(NEURITIS)
(CEREBRAL ARTERIOSCLEROSIS)

SEJHAR, Jiri; LOUCKA, Vlad.; SEBEK, Alois

Vertebral chordoma. Rozhl. chir. 40 no.11:748-753 N '61.

1. Krajska nemocnice v Ceskych Budejovicich, chirurgicke oddeleni, prednosta doc. dr. Jiri Sejhar, neurologicke oddeleni, prednosta primar dr. Vlad. Loucka, pat. anat. oddeleni, prednosta primar dr. Alois Sebek.

(SPINE neoplasms)   (CHORDOMA case reports)

HENNER, K.; BEJSOVEC,M.; LOUCKA, V.; MASAK,A.; POLACEK,L.; PONCA,E.;
        SVOBODA, A.; VACEK, M.

Multiple sclerosis in Czechoslovakia. Acta Univ. Carol. [med.]
(Praha) 10 no.7:541-548 '64

1. Neurological Department, Faculty of General Medicine, Charles
University, Prague (Director: Academician Prof. MUDr.K.Henner,
DrSc.).

BALATKA, Bretislav, CSc.; LOUCKOVA, Jaroslava, CSc.; SLADEK, Jaroslav, dr.,
CSc.

Draft of the concept and key of a detailed geomorphological map
1 : 50,000 (1 : 25,000). Sbor zem 68 no.3:229-238 '63.

1. Geograficky ustav Ceskoslovenske akademie vad, pobocka
Praha 3, Laubova 10.

BALATKA, Bretislav, CSc.; LOUCKOVA, Jaroslava, CSc.; SLADEK, Jaroslav, dr.,
CSc.

Report on the geomorphological survey of the southern part of
Polomene hory and Ustecka tabule. Sbor zem 68 no.3:259-264 '63.

1. Geograficky ustav Ceskoslovenske akademie ved, pobocka Praha 3,
Laubova 10.

LOUCKY, Ludvik, inz. (Praha)

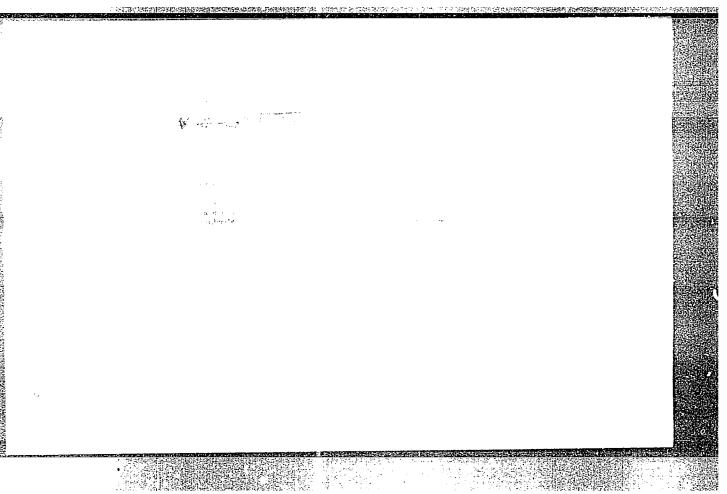Noncontact electric thermal sensor. Energetika Cz 14
no.1:51-52 Ja'64.

L 31067-66   EWP(h)/EWP(1)

ACC NR: AP6022551-...   SOURCE CODE: CZ/0031/66/014/002/0129/0131

AUTHOR: Louda, Frantisek Kysela, Josef

ORG: Obal, n.p., Prague

TITLE: Magnetic conveyers

SOURCE: Strojirenska vyroba, v. 14, no. 2, 1966, 129-131

TOPIC TAGS: conveying equipment, magnet, ferrite, packaging machinery

ABSTRACT: The article describes and gives diagrams of magnet-
ic conveyers developed at the plant for the transport of cans
and lids on production lines. Ferrite magnets are used, as
ALNI and ALNICO were too heavy. The equipment has been given
longthy testing on several lines in the packaging industry,
with good results. Orig. art. has: 5 figures. /JPRS/

SUB CODE: 13/ SUBM DATE: none

Card 1/1 CV

LOUDA, J.

"Coal according to last winter's experiences. p. 123." ZELEZNICE, Vol.3,
No.6, Feb.1953. Czechoslovakia.

SO: Monthly List of East European Accessions, L.C. Vol. 2, No.11, Nov. 1953
Uncl.

LOUDA, J.

Technical control of fuel needed on locomotives, p. 312, ZELEZNICE
(Ministerstvo dopravy) Praha, Vol. 4, No. 12, Dec. 1954

SOURCE: East European Accessions List (EEAL) Library of Congress,
          Vol. 4, No. 12, December 1955

LOUDA, J.

The use of soft coal dust in steam locomotives, p. 6.
(ZELEZNICAR.Vol. 6, no. 1, Jan. 1956, Praha, Czechoslovakia.)

SO: Monthly List of East European Accessions (EEAL) LC. Vol. 6, no. 12, Dec. 1957.
Uncl.

LOUDA, J.

Yield of wells; a critical analysis and comparison of the Thiem and Muller-Delitsch equations.

P. 197, (Voda) Vol. 36, no. 8, /:/// 1957, Praha, Czechoslovakia

SO: Monthly Index of East European Acessions (EEAI) Vol. 6, No. 11 November 1957

LOUDA, J.

"Technical and operational problems of diesel traction. p.258

ZELEZNICHI TECHNIIKA. (Ministerstvo dopravy) Praha, Czechoslovakia Vol. 6, no. 10, Oct. 1958
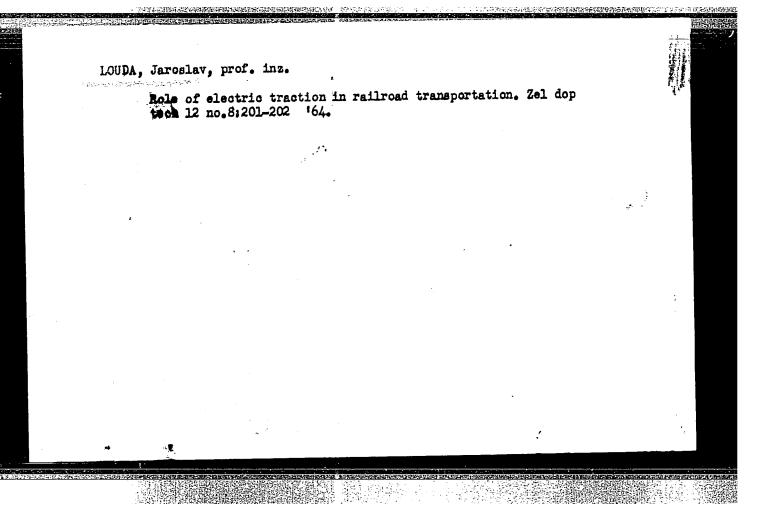
Monthly List of East European Accessions (EEAI) IC, Vol. 8, no. 6, June 1959

Uncl.

LOUDA, J.

Examination of the movement of long trains on a changing track profile. p. 106.

ZELEZNICNI DOPRAVA A TECHNIKA. (Ministerstvo dopravy)
Praha, Czechoslovakia
Vol. 7, no. 4, 1959.

Monthly List of East European Accessions (EEAI) LC, Vol. 8, No. 11.
Nov. 1959.
Uncl.

LOUDA, Jaroslav, prof. inz.

Role of electric traction in railroad transportation. Zel dop
tech 12 no.8:201-202 '64.

LCUDA, K.

"Remarks on the Pressure Test of Asbestos-Cement Pipes." p. 243
"A Contest for the Best Criticism of Technological Books." p. 246 (Voda, Vol. 33,
no. 9, Sept. 1953, Praha)

SO: Monthly List of Russian Accessions, East European / Library of Congress, Vol. 3, No. 3, March 1954, Uncl.

LOUDA, K.

Catching water in wells with horizontal boreholes.

p. 208
Vol. 5, no. 6, June 1955
VODNI HOSPODARSTVI
Praha

SO: Monthly List of East European Accessions (EEAL), LC, Vol. 5, no. 3
       March 1956

LOUDA, K.

Critical remarks on the significance of pressure tests in water mains.   p. 102.

Vol. 35, no. 4, Apr. 1956
VODA
Praha, Czechoslovakia

Source: East European Accession List.   Library of Congress
         Vol. 5, No. 8, August 1956

LCUPA, K.

Financing building investments with regard to labor and material. p. 59.(Voda, Praha.,
   Vol. 36, no. 3, Mar. 1957.)

SO: Monthly List of East European Accessions (EEAL) LC., Vol. 6, no. 7, July 1957. Uncl.

LOUDA, K.

TECHNOLOGY

Periodical: VODA. Vol. 37, no. 11, Nov. 1958.

LOUDA, K. Calculation of the yield of a well. p. 342.

LOUDA, Karel, inz. dr.
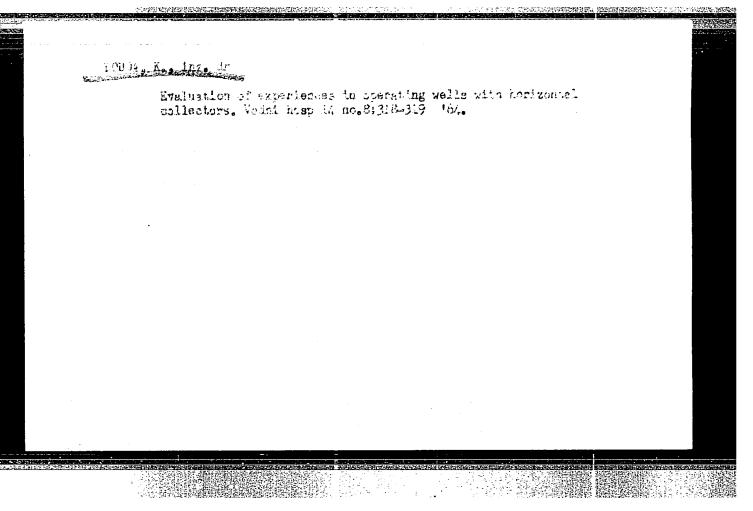
Evaluation of facts acquired from the horizontal wells in
the valley near Sojovice. Vodni hosp 13 no.10:361-372 '63.

1. Hydroprojekt, Praha.

LOUDA, Karel, dr. inz. (Prague)

Saturation of waterless space. Vodni hosp 14 no.6:207-214 '64.

POUR, K., Inc. dr

Evaluation of experiences in operating wells with horizontal collectors. Vodni hosp 14 no.8:318-319 '64.

LOUDA, L.

GEOGRAPHY & GEOLOGY

Periodicals: CASOPIS PRO MINERALOGII A GEOLOGII. Vol. 3, no2, 1958

SCHWARZ, R.; LOUDA, L. KOMorni hurka. pl 190

Motnly List of East European Accessions (EEAI) LC, Vol. 8, No.5
                                          May 1959, Unclass.

PECENKA, J.; SKVRNOVA, K.; HANA, I.; IZBICKY, A.; RUMOVA, B.; MARKVART, O.;
    LOUDA, L.; HARTL, Z.; REICL, J.; KLEINBAUER, V.

Evaluation of influenza vaccine. Cesk. epidem. mikrob. imun. 7 n.o.6:365-373 Nov 58.

1. Ustav epidemiologie a mikrobiologie v Praze-Zdravotnicka sprava min-isterstva narodni obrany. i. hyg. epidemiologicky odidil cs. lid armady - Krajska hyg. epid. stanice v Gottwaldove — Krajska hyg epid. stanice v Pardubicich. J. P. Praha 12 Srobarova 48.
            (INFLUENZA, prev. & control
                vaccine evaluation (Cz))

MENTBERGER, Jaroslav, inz.; LOUDA, Ladislav, inz.

Hygiene in operating portable pesticide dispersion motor apparatus.
Les cas 10 no.9:823-834 S '64.

1. Research Institute of Forestry and Game Keeping, Zbraslav-
Strnady (for Mentberger). 2. Institute of Industrial Hygiene and
Occupational Diseases, Prague (for Louda).

TIHELKOVA, Dagmar; LOUDA, Ladislav

Requirements for adjustment of the working stand on automotive
vibration rollers from the viewpoint of physiology and industrial
hygiene. Prac. lek. 17 no.1:9-14 Ja '65
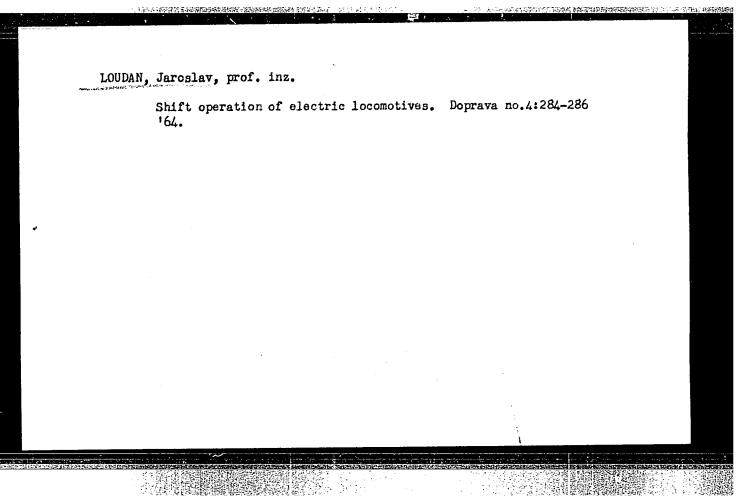
1. Ustav Hygieny prace a chorob z povolani v Praze (reditel: prof.
dr. J. Teisinger, DrSc.).

LOUDA, Miloslav

Automation of breadmaking equipment. Prum potravin 14 no.7:
340-342 Jl '63.

1. Zavody potravinarskych a chladicich stroju, n.p., Pradubice,
Vyzkumny ustav Praha.

LOUDAN, Jaroslav, prof. inz.

Shift operation of electric locomotives. Doprava no.4:284-286
'64.

LOUKOTKA, C

The Codex of Liberec.   p. 68

CESKOSLOVENSKA ETHNOGRAFIE   vol. 4, no. 1. 1956

CZECHOSLOVAKIA

SOURCE: EAST EUROPEAN ACCESSIONS LIST   VOL. 5, no. 7,   July 1956

LOUKOTKA, C.

Professor Paul Rivet is eighty years old.   p. 209.   CESKOSLOVENSKA
ETHNOGRAFIE. (Ceskoslovenska akademie ved a Slovenska akademia vied)
Praha. Vol. 4, no. 2, 1956.

SOURCE: East European Accessions List, Vol. 5, no. 9, September 1956

LOUKOTKA, C.

Bedrich Machulka's V Africe na stezkach zvere (On the Game Paths of Africa)
a book review. p. 210. CESKOSLOVENSKA ETHNOGRAFIE. (Ceskoslovenska
akademie ved a Slovenska akademia vied) Praha. Vol. 4, no. 2, 1956.

SOURCE: East European Accessions List, Vol. 5, no. 9, September 1956

LOUKOTKA, C.

Thor Heyedahl's Kon-Tiki; a book review. p. 211. CZECHOSLOVENSKA
ETHNOGRAFIE. (Ceskoslovenska akademie ved a Slovenska akademia vied)
Praha. Vol. 4, no. 2, 1956.

SOURCE: East European Accessions List, Vol. 5, no. 9, September 1956

LOUKOTKA, C.

IU. V. Knorozov's A Brief Summary of the Studies of the Ancient Maya Hieroglyhic Writings in the Soviet Union; a book review. p. 309.
(Ceskoslovenska Ethnografie, Vol. 4, no. 3, 1956, Praha, Czechoslovakia)

SO: Monthly List of East European Accessions (EEAL) LC, Vol. 6, no. 6, June 1957, Uncl.

LOUKOTKA, C.

A report on the congress of American studies in Copenhagen.

p. 302 (Cesjoslovenska Ethnografie) Vol. 5, No. 3, 1957. Praha, Czechollovakia.

SO: Monthly Index of East European Accessions (EEAI) LC Vol. 7, no.1, Jan 1958

LOUKOTKA, C.

The insufficiently known Papuan languages on the basis of L. Biro's notes.
In German. p. 433.

ACTA ETHNOGRAPHICA. Budapest, Hungary. Vol. 7, no. 3/4, 1958.

Monthly List of East European Accessions (EEAI), LC, Vol. 8, No. 7, July 1959
Uncl.

LOUKOTKA, C.

"Report on a study trip to Brazil, October 20, 1957-June 5, 1958."

CESKOSLOVENSKA ETNOGRAFIE, Praha, Czechoslovakia, Vol. 7, No. 2, 1959.

Monthly list of EAST EUROPEAN ACCESSIONS INDEX (EEAI), Library of Congress, Vol. 8, No. 8, August, 1959.
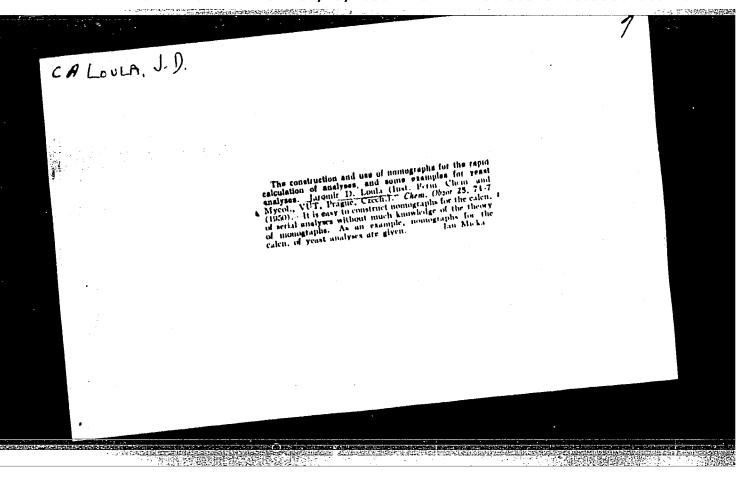
Unclassified.

LOULOTKA, I.

Eating establishments in Czechoslovakia. Obshchestv.pit. no.10: 53-54 O '58.   (MIRA 11:11)

1. Zamestitel' ministra vnutrenney torgovli Chekhoslovakii.
      (Czechoslovakia--Restaurants, lunchrooms, etc.)

C A LOULA, J. D.

The construction and use of nomographs for the rapid calculation of analyses, and some examples for yeast analyses. Jaromir D. Loula (Inst. Perm. Chem. and Mycol., VUT, Prague. Czech.). Chem. Obzor 25, 71-7 (1950). It is easy to construct nomographs for the calcn. of serial analyses without much knowledge of the theory of monographs. As an example, nomographs for the calcn. of yeast analyses are given. Ian Micka
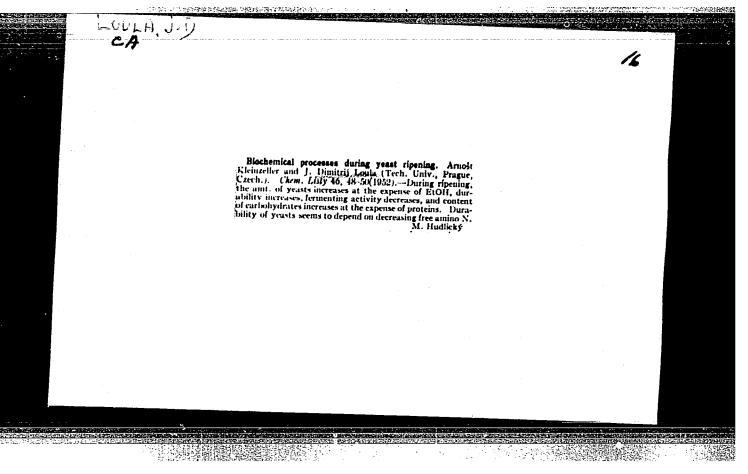
LOULA, J. D.

"Methods of Shock Workers and Rationalizers in Laboratories." p. 134   (ZA SOCIALISTICKOU
VEDU A TECHNIKU, Vol. 1, No. 3, Mar. 1951) Praha, Czechoslovakia

SO: Monthly List of East European Accessions, Library of Congress, Vol. 3, No. 4,
     April 1954. Unclassified.

LOULA, J.D.
CA

/6

Biochemical processes during yeast ripening. Arnošt Kleinzeller and J. Dimitrij Loula (Tech. Univ., Prague, Czech.). *Chem. Listy* 46, 48-50(1952).—During ripening, the amt. of yeasts increases at the expense of EtOH, durability increases, fermenting activity decreases, and content of carbohydrates increases at the expense of proteins. Durability of yeasts seems to depend on decreasing free amino N.
M. Hudlický

NOVOTNY, Mirko, arir., DvdRA, Jaroslar, dr. inr.

New of interest from Italy. Pt.2. Tech prac. 14 no.1:36-38 Ja '65.

CHMELIK, V.; LOULA, Z.

Studies on certain properties of lochia in early puerperium. Lek listy Brno 7 no. 20:503-506 15 Oct 1952.   (CLML 23:3)

1. Of the Gynecological Department of Kladno State District Hospital.

LOULA,Z.; SCHONFELD, V.

On the effect of the visual analyzer on the menstrual cycle.
Cesk. gynek. 29 no.1:124-127 F'64.

1. Gyn.-por. klin.lek.fak.hyg. KU v Praze (prednosta: doc.dr.
J.Padovec) a Nemocnice a poliklin. v Brandyse nad Labem.

LOUMA, B., promovany geolog; SEYCEK, J., inz.

Earth volume weight measurement by means of radioisotopes.
Inz stavby 10 no.7:265-269 Jl '62.

1. Geologicky pruzkum, n.p., Praha.

LOUMA, M.

Importance of safety measures in electric installations. p.309

ELEKTROTECHNIK. (Ministerstvo strojirentstvi) Praha

Vol. 10, no. 10, Oct. 1955

East European Accessions List   Vol. 5 No. 1   Jan. 1956

LOUTOCKY, Miroslav, inz.

Importance of the realization of waste water purification
projects in the ore dressing plants. Rudy 11 no.9:304-309
S '63.

1. Rudny projekt, Brno.

LOUTOCKY, V.

      Health legislation. Cesk. nemoc. 18 no.10:168-180 Dec 1950. (CLML 23:2)

      1. Gottwaldov.

LOUZENSKY, Gustav, Ing. Arch.

     Institute for Nursing Infants. Cesk. zdravot. 5 no.4:213-220
     Apr 57.

    1. Studijni a typisacni ustav Praha.
        (INFANT CARE
            Institute for Nursing Inf. (Cz))
        (INFANT CARE,
            nurseries in Czech. (Cz))

BORTSOVA, M.P.; GAMAYUNOVA, P.B.; POPLAVSKAYA, A.V.; SHPICHKO, N.P.;
        PAVLOV, G.D.; PODUNOVA, A.T.; LOVA, N.I.; ALEKSANDROVA, R.P.;
        ATARUKOV, A.G.; VOROB'YEVA, Ye.I.; GAN'YANTS, E.M.; GELLER, D.Ya.;
        PARSHINA, M.A.; FILINA, R.A.; CHUVELYAYEVA, Ye.S.

        Selecting demulsifiers for crude oils processed in Groznyi refineries.
        Trudy GrozNII no.4:17-26 '59.   (MIRA 12:9)

        1.Groznenskiy neftyanoy nauchno-issledovatel'skiy institut (GrozNII)
        (for Pavlov, Podunova, Lova).
                        (Groznyi--Petroleum--Refining)

SOV/20-120-6-34/59

AUTHOR: Lobachev, L. A.

TITLE: On the Theory of Chain-Like Thermal Propagation of Flames
               (K teorii tsepochechno teplovogo rasprostraneniya plameni)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 120, Nr 6,
               pp. 1287 - 1290 (USSR)

ABSTRACT: Such propagations of a thermal flame are termed "chain-like
               thermal" in which the reaction is developed according to a chain
               mechanism with an uninterrupted supply of heat (together
               with the active centers) from the domains with an high temper-
               ature and an high concentration of the active centers. The
               following mechanism describes the chain reaction : $A \rightarrow 2P$
               (initiation), $P+A \rightarrow 2C+P$ (chain), $P+P+M \rightarrow 2C+M$ (rupture of
               the chain). In this case A denotes the initial material, C the
               final product and P the active center. An equation describing
               the steady laminar flame is given and subsequently the pertinent
               boundary conditions and an ansatz for the solution of this
               equation are given. The computation is outlined in short.
               Approximation expressions for the temperature gradient and for
               the linear velocity of the flame are written down. In order to

Card 1/3

On the Theory of Chain-Like Thermal Propagation of   SOV/2o-12o-6-34/59
Flames

check these relations the author numerically computed the
combustion in the decomposition of hydrazine. The flame velocity
is proportional to the fourth root from the pressure. By means
of a given formula the true activation energy of the reaction
can be computed from the experimental dependence of the square
of the flame velocity upon the inverse temperature. There are
3 figures, 1 table, and 1 reference, 0 of which is Soviet.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of
Chemical Physics, AS USSR)

PRESENTED: March 6, 1958, by V. N. Kondrat'yev, Member, Academy of
Sciences, USSR

SUBMITTED: February 24, 1958

Card 2/3

On the Theory of Chain-Like Thermal Propagation of   SOV/2o-12o-6-34/59
Flames

1. Flame propagation--Theory

Card 3/3

·5(4).
AUTHOR: Lovachev, L. A.   SOV/20-123-3-34/54

TITLE: On the Rôle of the Branching and Rupture of Chains in the
                  Chain-Thermal Propagation of a Flame (O roli razvetvleniya i
                  obryva tsepey pri tsepochechno-teplovom rasprostranenii plameni)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 123, Nr 3, pp 501-504
                  (USSR)

ABSTRACT: This paper deals with the chain mechanism of the decomposition
                  of A, which includes 2 active centers successively reacting with
                  A and reducing each other. This chain mechanism can be
                  represented as a simplified scheme with an active center of
                  one type P (Ref 1):
                  A $\rightarrow$ 2P (initiation) $Q_R = h_R R(T')$

                  P + A $\rightarrow$ 2C + P (continuation) $Qn = hFn = hK(T')n_A n$

                  P $\rightarrow$ 3P (branching) $Q_V n = h_V V n = h_V K_V(T')n_A n$

                  $\begin{pmatrix} P \rightarrow \text{linear abruption} \\ P + P \rightarrow A \text{ (abruption)} \end{pmatrix}$ $Q_W n^2 = h_W W(T')n^2$

Card 1/3   On the right hand, the expressions for the rates of the heat

production are given. h_i denotes the heat effect, W - the
constant of the rate of the square abruption of chains,
K_1 - the constant of the rate of reaction, n_A - the dimension-
less weight concentration of A; n - the dimension-
less weight concentration of P. Formulae are given for the rate
of the linear branching or of the linear abruption of the chains
and also for the steady propagation of a laminar one-dimensional
flame. After several steps, the velocity of the propagation of
the flame is found. This formula is specialized for the case in
which the rate of initiation can be neglected. The lower the
temperature of combustion T'_{comb}, the greater the influence of the

square breaking of the chains, if other conditions are equal.
The lower the final value of $t = n_{final}/2$, the greater the

influence of the branching of the chains on the propagation
velocity u_o of the flame. n_{final} denotes the dimensionless

Card 2/3   weight concentration of P in the final state. The smaller n_{final}

On the Rôle of the Branching and Rupture   SOV/20-123-3-34/54
of Chains in the Chain-Thermal Propagation of a Flame

(if the other conditions are equal), the more distinct the
influence of the linear abruption of the chains. In order to
illustrate the above-discussed considerations, the author carried
out numerical computations for examples of flames caused by
decomposition of hydrazine. All the initial data were taken from
the papers of L. A. Lovachev (Ref 1) and D. B. Spalding (Ref 2).
At high values of T'_{final}, the rate of the square abruption of

the chains has only a minute influence on u_o, but at low T'_{final}
this influence is more distinct. The data concerning the
influence of the branching and of the abruption upon u_o are

given in a table for the example of the decomposition of hydrazine.
There are 1 table and 2 references, 1 of which is Soviet.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of
               Chemical Physics of the Academy of Sciences, USSR)

PRESENTED: July 7, 1958, by V. N. Kondrat'yev, Academician

SUBMITTED: July 4, 1958

Card 3/3

MATSUDA, Khadzima [Matsuda, Hajime]; KHAYASI, Kasiva [Hayashi, Kashiva];
     MEL'NIKOV, G.V. [translator]; ATLIVANNIKOV, Yu.L. [translator];
     LOBACHEV, L.A. [translator]; NEPODAYEV, Yu.A., red.; REZOUKHOVA,
     A.O., tekhn.red.

[Nuclear weapons and man] IAdernoe oruzhie i chelovek. Moskva,
Izd-vo inostr.lit-ry, 1959. 307 p. [Translated from the
Japanese]   (MIRA 12:9)
          (ATOMIC WEAPONS--PHYSIOLOGICAL EFFECT)

5(4)

AUTHOR: Lobachev, L. A.

SOV/20-124-6-25/55

TITLE: The Theory of the Chain-like Thermal Propagation of a Flame With 2 Active Centers (Teoriya tsepochechno-teplovogo rasprostraneniya plameni s dvumya aktivnymi tsentrami)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 124, Nr 6, pp 1271-1274 (USSR)

ABSTRACT: The scheme of the reaction has the form $M + A \longrightarrow 2P_1 + M$, $P_1 + B \longrightarrow C + P_2$, $P_2 + A \longrightarrow C + P_1$, $2P_1 + M \longrightarrow A + M$. The corresponding expressions for the velocity of heat liberation are also written down and the system of denotation used is defined. Next, the system of three equations for the laminary plane flame is written down. Expressions are also written down for the concentration of the active centers. The calculation is followed step by step. The expressions derived in the present paper permit the determination of the effective velocity constant of the chain extension as well as of the effective concentration of the active centers of one kind from the data for the reaction scheme with two active centers. The author also calculated the theoretical values

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The Theory of the Chain-like Thermal Propagation   SOV/20-124-6-25/55
of a Flame With 2 Active Centers

of the velocity of propagation of the flame (cm/sec) for two
cases of a chlorine-hydrogen flame:

Composition of the fuel mixture	$0.6H_2 + 0.4Cl_2$	$0.5H_2 + 0.5Cl_2$
Experimental data obtained by E. Bartholomé (Ref 4)	405	350
According to the formula theoretically derived here	350	485

There are 1 table and 6 references, 2 of which are Soviet.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute
of Chemical Physics of the Academy of Sciences, USSR)

PRESENTED: November 5 1958, by V. N. Kondrat'yev, Academician

SUBMITTED: November 1, 1958
Card 2/2

5 (4), 10 (7)

AUTHOR: Lobachev, L. A.   SOV/20-125-1-34/67

TITLE: The Theory of the Chain-like Thermal Propagation of a Flame
               With Two Active Centers and Different Diffusion Coefficients
               (Teoriya tsepochechno-teplovogo rasprostraneniya plameni s
               dvumya aktivnymi tsentrami i razlichnymi koeffitsiyentami
               ikh diffuzii)

ABSTRACT: The author assumes the following reaction scheme:

$M + A \rightarrow 2P_1 + M_1$ $\Phi = h_R R(T')$ (1)

$P_1 + B \rightarrow C + P_2$ $Q_1 n_1 = h_1 F_1 n_1 = h_1 K_1(T') n_B n_1$ (2)

$P_2 + A \rightarrow C + P_1$ $Q_2 n_2 = h_2 F_2 n_2 = h_2 K_2(T') n_A n_2$ (3)

$P_2 + C \rightarrow B + P_1$ $Q_3 n_2 = h_3 F_3 n_2 = h_3 K_3(T') n_C n_2$ (2')

$P_1 + C \rightarrow A + P_2$ $Q_4 n_1 = h_4 F_4 n_1 = h_4 K_4(T') n_C n_1$ (3')

$2P_1 + M \rightarrow A + M$ $X n_1^2 = h_W W(T') n_1^2$

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The Theory of the Chain-like Thermal Propagation of   SOV/20-125-1-34/67
a Flame With Two Active Centers and Different Diffu-
sion Coefficients

where A and B denote the initial substances, C the reaction
product, and P_1 and P_2 the active centers. The equations on
the right side concern the velocities of thermal radiation
and absorption. In this paper the author employs a manner of
denotation similar to that of a previous paper (Ref 1). Under
the given conditions the system of equations for a steady,
laminar, plane flame comprises the following three equations:

$$\lambda pp' - Bcp + Q_1 n_1 + Q_2 n_2 + Q_3 n_2 + Q_4 n_1 + Xn_1^2 + \Phi = 0$$

$$D_1 p^2 n_1'' - pn_1'(B - D_1 p') + F_2 n_2 + F_3 n_2 - F_1 n_1 - F_4 n_1 + R - Wn_1^2 = 0$$

$$D_2 p^2 n_2' - pn_2'(B - D_2 p') + F_1 n_1 + F_4 n_1 - F_2 n_2 - F_3 n_2 = 0$$

where $B = u\varrho$; $D_1 = \varrho D_{P_1}$, $D_2 = \varrho D_{P_2}$, u denotes the flow velo-

city, D_{P_1} and D_{P_2} the diffusion coefficients of P_1 and P_2. The

Card 2/4   manner of denotation and the additional conditions of the equa-
tions are similar to the aforementioned previous paper. When

The Theory of the Chain-like Thermal Propagation of a Flame With Two Active Centers and Different Diffusion Coefficients

taking into account the square rupture of the chains the final results are much more complicated, however, the theoretical velocities of flame propagation are not changed considerably. Therefore the author assumes W to be equal to zero from the very beginning of the computations. Further, he indicates the way of computing the velocity of flame propagation, taking into account the square rupture of the chains. For these computations the author employs previously determined approximate equations. The course of computation is followed up step by step. The author determines the theoretical values of the velocity of flame propagation for two cases of a hydrogen-chloride flame. The pertinent results are contained in a table. The real propagation of such a flame is probably correctly described by the theoretical investigation under review. The results obtained permit the determination of the true constants and activation energies of elementary processes on the basis of the experimental dependences of the velocity of flame propagation on the burning temperature. For this purpose it is also possible to employ the dependences of the velocity of flame propagation on pressure.

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The Theory of the Chain-like Thermal Propagation of   SOV/20-125-1-34/67
a Flame With Two Active Centers and Different Diffu-
sion Coefficients

An equation deduced here permits the computation of the varia-
tion of the velocity of flame propagation with simultaneous
variation of the diffusion coefficients of the active centers
and the thermal conductivity of the mixture. There are 2 tables,
and 5 references, 2 of which are Soviet.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of
Chemical Physics of the Academy of Sciences USSR)

PRESENTED: November 14, 1958; by V. N. Kondrat'yev, Academician

SUBMITTED: November 11, 1958

Card 4/4

5(4) 11. 1000

66184

AUTHOR: Lovachev, L. A.

SOV/20-128-5-38/67

TITLE: The Theory of Chainlike Thermal Propagation of a Flame in Systems
               With Branched Chain Reactions

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 128, Nr 5, pp 995-998
               (USSR)

ABSTRACT: In previous articles (Refs 1-4) the author investigated the
               propagation of a flame in systems with unbranched or degenerately
               branched reactions. Good agreement between theory and experiment
               was obtained for chlorine-hydrogen flames. The present article
               deals with the combustion of hydrogen in oxygen according to a
               branched chain reaction: $H_2 + O_2 \longrightarrow 2OH$, $H_2 + M \longrightarrow 2H + M$,

               $O_2 + O_2 \longrightarrow O_3 + O$, $OH + H_2 \longrightarrow H_2O + H$, $H + O_2 \longrightarrow OH + O$,

               $O + H_2 \longrightarrow OH + H$. For these reactions, the equations for the

               velocity of heat emission or absorption are written down, and a
               set of equations is set up for a laminar, flat flame. Two equations

Card 1/3   are obtained for u_o, the velocity of propagation of the flame. The

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SOV/20-128-5-38/67

The Theory of Chainlike Thermal Propagation of a
Flame in Systems With Branched Chain Reactions

dependence of the velocity of flame propagation on the combustion
temperature was defined by equation (15) for mixtures with the
following data: (1) $0.72H_2 + 0.2795O_2 + 0.0015N_2$ with a thermal
conductivity $\lambda_0 = 2.6 \cdot 10^{-4}$, diffusion coefficient D_{P2O} of the
hydrogen atom $= 1.35$, $a_2 = 1.9$, initial temperature $T'_0 = 293$ K,
combustion temperature $T'_b = 3045$ K; (2) $0.43H_2 + 0.57$ air,
$\lambda_0 = 1.6 \cdot 10^{-4}$, $D_{P2O} = 1.15$, $a_2 = 1.9$, $T'_0 = 293$ K, $T'_b = 2,126$ K.

The values $K_2^0 = 1.32 \cdot 10^{14} \exp(-14,000/RT')$ $cm^3/mol.sec$ and

$K_2^0 = 4.72 \cdot 10^{14} \exp(-16,300/RT')$ computed for constant K_2 of the
reaction rate according to G. Jahn (Ref 8) and E. Bartolomé (Ref 9)
are in good agreement with the value $K_2^0 = 5.66 \cdot 10^{-13} \exp(-15,100/RT')$
found by L. V. Karmilova, A. B. Nalbandyan, and N. N. Semenov
(Refs 10, 11). Equation (15) indicates that the velocity of flame
propagation is proportional to the thermal conductivity of the
mixture and inversely proportional to the square root of the

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The Theory of Chainlike Thermal Propagation of a
Flame in Systems With Branched Chain Reactions

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diffusion coefficient of the hydrogen atom. Furthermore, it
follows from equation (15) that in the system with branched chain
reactions the combustion temperature and the velocity of flame
propagation will drop in mixtures of high combustion heat,
whereas in mixtures of low combustion heat the combustion
temperature and velocity of flame propagation are practically
independent of pressure. There are 13 references, 8 of which are
Soviet.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of
Chemical Physics of the Academy of Sciences, USSR)
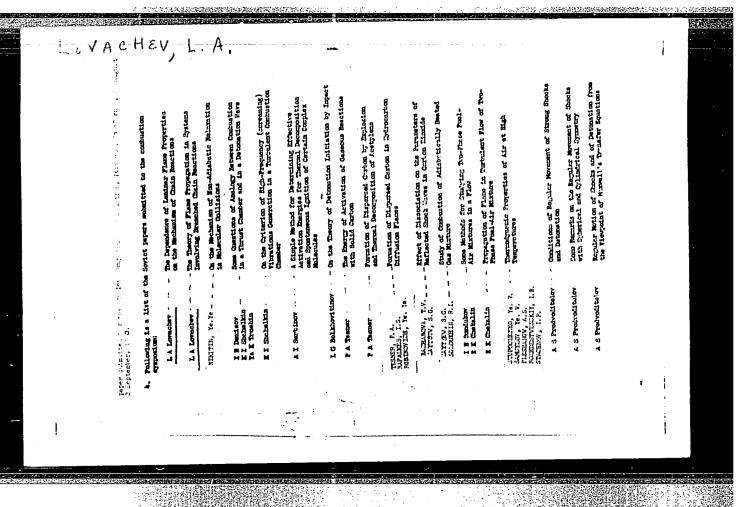
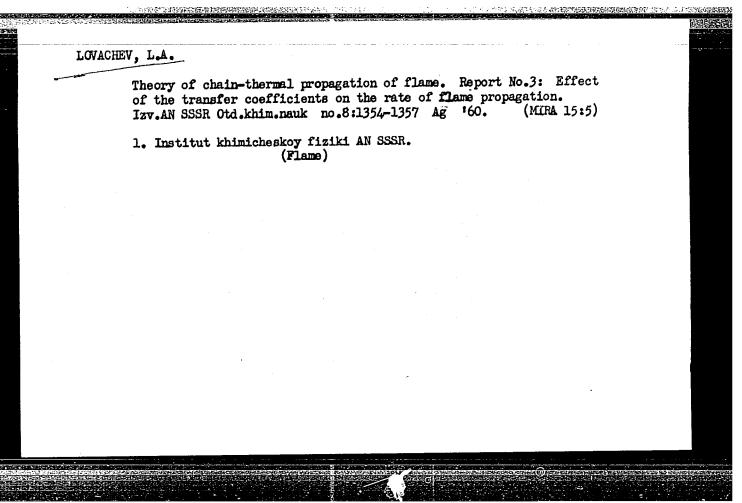PRESENTED: May 22, 1959 by V. N. Kondrat'yev, Academician ν

SUBMITTED: May 18, 1959

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LEVACHEV, L.A.

Paper submitted ...
2 September 1960

b. Following is a list of the Soviet papers submitted to the combustion symposium:

L A Lovachev	The Dependence of Laminar Flame Properties on the Mechanism of Chain Reactions
L A Lovachev	The Theory of Flame Propagation in System Involving Branched Chain Reactions
KHITRIN, Ye.Ye.	On the Mechanism of Non-Adiabatic Reignition in Molecular Collisions
I B Denisov, K I Shchelkin, Ya K Troshin	Some Questions of Analogy Between Combustion in a Thrust Chamber and in a Detonation Wave
K I Shchelkin	On the Criterion of High-Frequency (screaming) Vibrations Generation in a Turbulent Combustion Chamber
A I Serkov	A Simple Method for Determining Effective Activation Energies for Thermal Decomposition and Spontaneous Ignition of Certain Complex Molecules
L G Bolkhovitinov	On the Theory of Detonation Initiation by Impact
P A Turner	The Energy of Activation of Gaseous Reactions with Solid Carbon
P A Turner	Formation of Dispersed Carbon by Explosion and Thermal Decomposition of Acetylene
TESNER, P.A., NAPALKOV, I.S., ROBINOVICH, Ye. Ya.	Formation of Dispersed Carbon in Detonation Diffusion Flames
BALENKOVA, T.V., LATYEV, S.G.	Effect of Dissociation on the Parameters of Reflected Shock Waves in Carbon Dioxide
LATYEV, S.G., SOLODKIN, R.I.	Study of Combustion of Adiabatically Heated Gas Mixture
I B Denisov, K K Chetalin	Some Methods for Studying Two-Phase Fuel-Air Mixtures in a Flow
K K Chetalin	Propagation of Flame in Turbulent Flow of Two-Phase Fuel-Air Mixture
STUPOCHENKO, Ye. V., SAMUILOV, Ye. V., PLESHANOV, A.S., ROZHDESTVENSKIY, I.B., STAKHANOV, I.P.	Thermodynamic Properties of Air at High Temperatures
A S Predvoditelev	Conditions of Regular Movement of Strong Shocks and Detonation
A S Predvoditelev	Some Remarks on the Regular Movement of Shocks with Spherical and Cylindrical Symmetry
A S Predvoditelev	Regular Motion of Shocks and of Detonation from the Viewpoint of Maxwell's Transfer Equations

LOVACHEV, L.A.

Theory of chain-thermal propagation of flame. Report No.3: Effect of the transfer coefficients on the rate of flame propagation. Izv.AN SSSR Otd.khim.nauk no.8:1354-1357 Ag '60.   (MIRA 15:5)

1. Institut khimicheskoy fiziki AN SSSR.
                    (Flame)

23481

S/123/61/000/009/024/027
A004/A104

ll.7200

AUTHOR: Lovachev, L. A.

TITLE: The effect of ozone on the hydrocarbon combustion rate

PERIODICAL: Referativnyy zhurnal, Mashinostroyeniye, no. 9, 1961, 20, abstract
             9I164. (V sb. "3-e Vses. soveshchaniye po teorii goreniya. T. I."
             Moscow, 1960, 11-16)

TEXT: The addition of ozone to a fuel mixture consisting of hydrocarbons
increases the rate of chain formation and, consequently, the flame propagation
velocity. Theoretically the problem is reduced to a simulated problem with an
active center of one kind, moreover it is assumed that the formation of active
centers is determined by the decay rate of the initial substances whose concentra-
tion depends on the temperature only. It is taken into consideration that the
addition of ozone owing to its low concentration does not affect the mixture
temperature. A formula has been developed to determine the coefficient that
takes into account the effect of the formation rate of active centers depending
on the ozone concentration, which makes it possible to calculate the flame

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23481
S/123/61/000/009/024/027
A004/A104

The effect of ozone ...

propagation velocity. An addition of 10% ozone increases the flame velocity
by 60%. The calculations agreed in a satisfactory way with the tests. There are
8 references.

I. Barskiy

[Abstractor's note: Complete translation]

Card 2/2

Lovachev L A

S/062/60/000/06/03/011
B020/B061

81932

11.3000
11.1000

AUTHOR: Lovachev, L. A.

TITLE: Theory of Chain-thermal Flame Propagation. I. Two Active
            Centers

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk,
            1960, No. 6, pp. 1022-1029

TEXT: On the basis of results obtained in previous works (Refs. 1,2), in
which the chain mechanism of the decomposition reaction was represented
by a simplified scheme with one active center of one type, equations are
derived here for the determination of the rate of propagation of the flame
in a system with two active centers. Equation (26) for the determination of
the rate of propagation of the flame, with consideration of the diffusion
of both active centers and the rate of formation and the quadratic inter-
ruption of the chains, was obtained for the scheme of the chain reaction
with two active centers, which both react with the initial substance, and
reduce one another. Theoretical values for the rate of propagation of the

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Theory of Chain-thermal Flame Propagation.
I. Two Active Centers

81932
S/062/60/000/06/03/011
B020/B061

flame were calculated for two cases of the burning of chlorine-- hydrogen
mixtures, and then compared with the experimentally obtained values
(Table), when a satisfactory agreement was noted. The characteristics of
the dependences of the rate of propagation of the flame on the temperature
and pressure of combustion, which were obtained from the solution with
consideration of the diffusion of two active centers, were compared by
using the simplified scheme, with results obtained from an active center
of one type. It may be concluded from the comparison of the theoretical
values u_0 , calculated form the relation of the type (26), with the results
obtained through numerical integration of the initial system of equations
for an active center of one type, and finally from the agreement of the
theoretical values with those obtained experimentally, that the theoretical
treatment of flame propagation in systems with unbranched chain reactions
is basically correct. There are 1 table and 7 references: 4 Soviet,
1 German, 1 British, and 1 USA.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of
             Chemical Physics of the Academy of Sciences USSR)

SUBMITTED: November 25, 1958
Card 2/2

LOVACHEV L. A.

82100
S/062/60/000/07/03/007
B015/B054

11.0000

AUTHOR: Lovachev, L. A.

TITLE: Theory of Chain-thermal Flame Propagation. Information 2.
             Two Active Centers With Different Diffusion Coefficients

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk,
             1960, No. 7, pp. 1191-1199

TEXT: The author derives equations for calculating the flame propagation
velocities as well as the distribution of concentration of active centers
in dependence on the temperature change for a nonbranched reaction scheme
with two types of active centers and different diffusion coefficients.
With the aid of the reaction scheme given, the author calculates the flame
propagation velocity for two chlorine hydrogen mixtures (Table 1). A com-
parison of calculated values with the experimental data by Bartolomé
(Ref. 9), shows a good agreement (Table 2). The results obtained suggest
the possibility of determining the real constants and activation energies
of the processes of chain prolongation from the experimental dependences
of the flame propagation velocity on the combustion temperature. Finally,

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Theory of Chain-thermal Flame Propagation.
Information 2. Two Active Centers With Different
Diffusion Coefficients

82100
S/062/60/000/07/03/007
B015/B054

the author thanks V. N. Kondrat'yev for giving advice. There are 2 tables
and 9 references: 5 Soviet, 2 German, 1 British, and 1 American.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR
                (Institute of Chemical Physics of the Academy of Sciences,
                USSR)

SUBMITTED: December 2, 1958

Card 2/2

Lovachev, L. A.

82039
S/062/60/000/02/02/012
B003/B066

11.1000

AUTHOR: Lovachev, L. A.

TITLE: Chain-thermal Flame Propagation. Second Report. Effect of
            Pressure and Temperature

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk,
            1960, No. 2, pp. 204 - 210

TEXT: A formula is derived, which includes the pressure and temperature
dependence of the propagation velocity of a flame. The change of the
velocity of flame propagation as dependent on the pressure depends on the
composition of the combustible mixture, its calorific value, and on the
initial temperatures. The propagation rate of the flame of mixtures with
high calorific values may be independent of the pressure. The results
obtained from the above formula for the pressure dependence of the flame
propagation of a methane - air mixture corresponding to stoichiometric
ratios, as well as for ethylene - air mixtures of different composition
are in good agreement with the experimental results. It may be seen from
the graphical illustration of the relationship between the logarithm of

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Chain-thermal Flame Propagation. Second Report,   S/062/60/000/02/02/012
Effect of Pressure and Temperature   82039
                                                    B003/B066

the velocity of flame propagation and the reciprocal combustion
temperature that the angle of slope of the straight line depends not
only on the activation energy but also on the reaction heat during the
formation of the active center. The resultant interrelation permits the
determination of the true activation energy when analyzing the experi-
mental data. Numerous diagrams illustrate the given interpretations.
There are 6 figures and 8 references: 4 Soviet, 2 American, and 2 English.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute
             of Chemical Physics of the Academy of Sciences USSR)

SUBMITTED: June 11, 1958

Card 2/2

11.1000.

S/062/60/000/03/03/007
B008/B006

AUTHOR: Lovachev, L. A.

TITLE: On Chain-reaction Theory of Propagation of Flames."
               3. Influence of Diffusion Coefficient and Thermal
               Conductivity

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh
               nauk, 1960, No. 3, pp. 442-446

TEXT: An equation (8) is given describing the relation between the
propagation rate of the flame and the diffusion coefficient of the
active center, the thermal conductivity, and other kinetic- and thermo-
dynamic quantities of a combustible mixture. From this equation, the
ratio of the propagation rates of a flame on changes in the diffusion
coefficient and thermal conductivity can be calculated. Furthermore, the
pressure- and temperature dependences of the propagation rates u_0 can be
found without calculating their absolute values. The dependence of u_0 on
the ratio of the diffusion coefficient of the active center and the

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30698

On Chain-reaction Theory of Propagation of Flames. 3. Influence of Diffusion Coefficient and Thermal Conductivity

S/062/60/000/03/03/007
B008/B006

coefficient of thermal conductivity $\varkappa$ is described by equation (4), which contains the coefficients ξ and ξ. In Fig. 1, a nomogram is given for determining the coefficient φ of $\varkappa$ and T_0^i/T_m^i (ratio of initial temperature and maximum temperature in $^\circ K$) for various values of the power α. Fig. 2 shows the enlarged right-hand section of the nomogram. In Fig. 3, the coefficient ξ is plotted as a function of the quantity M of equation (6). Equation (8) was applied to determine the ratios of the rate of flame propagation in three stoichiometric methane¹- oxygen mixtures (9.46% methane) containing equal amounts of an inert diluent, i.e. a mixture with nitrogen (air mixture), with argon instead of nitrogen, or with helium instead of nitrogen. Theoretical- and experimental data were in good agreement (Table p. 446). There are 3 figures, 1 table, and 3 references, 2 of which are Soviet.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics of the Academy of Sciences, USSR)

SUBMITTED: June 14, 1958

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81597
S/062/60/000/04/02/006
B004/B066

II·5000

AUTHOR: Lovachev, L. A.

TITLE: On Chain-thermal Flame Propagation. 4. Effect of Branching
               and Rupture of Chains

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk,
               1960, No. 4, pp. 645 - 650

TEXT: In previous papers (Refs. 1, 2) the author established equations
to calculate the propagation velocity of a flame, in which the rate of
branching and rupture of the chain reaction had not been considered. In
the present paper the course of the decomposition under the influence
of two active centers was investigated, which react successively with
the initial substance and reduce each other. For simplification purposes
they were comprised to one single center. The author writes down the
following equations: Equations (1) and (2) for the steady propagation of
a laminar flame; equations (3) and (4) for the concentration n_m of the
active center at the temperature T_m. Therefrom the equations (7), (11),

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On Chain-thermal Flame Propagation. 4.
Effect of Branching and Rupture of Chains

81597
8/062/60/000/04/02/006
B004/B066

and (12) for the propagation velocity u_o of the flame are derived. By
these equations the decomposition of hydrazine was calculated. The values
for the constants were gathered from the paper of Ref. 1. Table 1 gives
the values of u_o (cm/sec) at an initial temperature of 300°K, final

temperature of 1950°K, and Table 2 the values for a final temperature of
1280°K considering the rate of the linear branching and the square
rupture of the chain reaction, the rate of initiation of the chain re-
action, heat conductivity and diffusion coefficient of the active center.
The author concludes from these data as follows: the lower the combustion
temperature, the lower the ratio of the product from specific heat,
density and diffusion coefficient to heat conductivity, the greater is
the influence exercised by the square rupture of the chain upon the pro-
pagation velocity of the flame. If this relation or the concentration
of the active center at the combustion temperature decrease, the in-
fluence of the linear branching and the square rupture of the chain
reaction upon the propagation velocity increases owing to the reduction
of the number of active centers produced by diffusion. There are 2
tables and 4 Soviet references.

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On Chain-thermal Flame Propagation. 4.   81597
Effect of Branching and Rupture of Chains   S/062/60/000/04/02/006
                                              B004/B066

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR
               (Institute of Chemical Physics of the Academy of Sciences,
               USSR)

SUBMITTED: June 16, 1958

Card 3/3

S/062/60/000/008/004/012
B004/B054

AUTHOR: Lovachev, L. A.

TITLE: The Theory of the Chain-shaped Thermal Propagation of the
               Flame. 3. The Influence of Transfer Coefficients on the
               Propagation Velocity of the Flame

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk,
               1960, No. 8, pp. 1354-1357

TEXT: In previous papers (Refs. 1-3) the author dealt with the influence
of heat conductivity and diffusion coefficients on the propagation veloci-
ty u_0 of the flame. On the simplifying assumption of only one activity
center, u_1 was calculated for stoichiometric methane-oxygen mixtures which
were rarefied with nitrogen (methane-air mixture), argon ("argon air"), or
helium ("helium air"). The author discusses the equation system (1) - (4)
derived in Ref. 3, which represents the relationship between initial tem-
perature, burning temperature, maximum temperature gradient, concentration
of activity centers, diffusion coefficients of the activity centers, heat
conductivity, specific heat, density, molecular weight, heat coefficient,
and rate of the chain reaction. As experimental data were missing, only
Card 1/2

The Theory of the Chain-shaped Thermal Propagation   S/062/60/000/008/004/01?
of the Flame. 3. The Influence of Transfer Coeffi-   B004/B054
cients on the Propagation Velocity of the Flame

relative relations could be determined. On the basis of experimental data
published by W. H. Clingman, R. S. Brokaw, R. N. Pease (Ref. 4) concerning
partial pressure and diffusion coefficients of H, OH, and O, and the heat
conductivity in the gas mixtures mentioned (Table 1), the author derives
equation (5). The results of calculation according to equation (5) are com-
pared in Table 2 with the experimental data (Ref. 4), the calculations bas-
ing on the theory of heat, and the calculations made in Ref. 1 which only
consider the diffusion of H atoms or the diffusion of the OH groups The
new calculations according to equation (5), which consider both the diffu-
sion of H atoms and that of the OH groups, show a good agreement of the
values for $(u_o)_{N_2}$, $(u_o)_{Ar}$, and $(u_o)_{He}$ with the experimental data of Ref.4.
There are 2 tables and 5 references: 4 Soviet and 1 US.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR
                (Institute of Chemical Physics of the Academy of Sciences
                USSR)

SUBMITTED: January 2, 1959

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Card 2/2

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35755
S/124/62/000/003/034/052
D237/D302

AUTHOR: Lovachev, L.A.

TITLE: Influence of ozone on the combustion velocity of
               hydro-carbons

PERIODICAL: Referativnyy zhurnal, Mekhanika, no. 3, 1962, 100,
               abstract 3B646 (Sb. 3-ye Vses. soveshchaniye po teorii
               goreniya. V.1, M., 1960, 11 - 16)

TEXT: The aim of this work is further developed of the author's
theory of thermal flame propagation. A theoretical relation was ob-
tained for determining the change of the velocity of flame propaga-
tion on introduction into the burning mixture, undergoing straight-
forward or degenerate-branching reactions, small quantities of ozo-
ne. A satisfactory agreement is found between experimental data and
theoretical results. [Abstractor's note: Complete translation].

Card 1/1

S/124/61/000/011/029/046
D237/D305

//. 7200

AUTHOR: Lovachev, L.A.

TITLE: Laminar flame properties, dependent on the mechanism
             of the chain reaction

PERIODICAL: Referativnyy zhurnal, Mekhanika, no. 11, 1961, 100,
             abstract 11B668 (Sb. 3-ye Vses. Soveshchaniye po teorii
             goreniya, v. 1, M., 1960, 17 - 29)

TEXT: Basic properties and relationships of the velocity of sprea-
ding of a laminar flame in the systems with simple and branching
chain reactions, are compared. Influence of pressure, burning tem-
perature, initial concentrations of fuel and oxidizer and the trans-
fer coefficient on the velocity of flame spread are discussed theo-
retically. Results obtained were compared with experimental data
available. Then the deduction is made that distinct differences and
branching reactions, make it possible to determine from known pro-
perties of the flame, the type of reaction occuring in a given mix-
ture and the rate of reaction constants of basic chemical reactions.
12 references. [Abstractor's note: Complete translation].
Card 1/1

AUTHOR: Lovachev, L. A.   S/020/60/131/04/044/073
                                                       B004/B125
TITLE: The Theory of Flame Propagation in Systems With Branching Chain
            Reactions

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol 131, Nr 4, pp 876 - 879 (USSR)

TEXT: The author refers to a paper by J. C. Giddings and J. O. Hirschfelder
(Ref 1) in which the numerical integration is carried out of the equations
which describe the propagation of a laminar flame in branching chain reactions.
The scope of this paper is to find, under consideration of an earlier paper of
the author (Ref 2) an approximating equation the resultants of which agree
sufficiently well with the results from reference 1. Therefore the author pre-
sents the equations for the formation, development, branching, and stopping
(linear and quadratic) of the reaction, as well as equation (1) for the propaga-
tion rate of the flame. He carries out the calculation of the coefficients of
this equation and obtains the equation (14). In table 1 the results of the cal-
culation of a model reaction given in reference 1 by means of equation (14) and
by means of numerical integration are set opposite one another. The negligible
deviations of the values found by means of equation (14) make possible the
application of this equation to the calculation of velocity constants on the

Card 1/2